DISCUSSION OF THE AMENDMENT

Claims 1, 5-6, 8-15, and 19-22 are active in the present application. Claims 21 and 22 are new claims. Support for new Claims 21 and 22 is found in the previously presented claims.

No new matter is added.

REMARKS

The Office rejected the claims as obvious over Tanikawa (US 5,364,722), alone or in combination with Terauchi (US 6,733,941).

Present independent Claims 1 and 21 recite a wax having a set of endotherms. The set of endotherms includes a primary endotherm and a secondary endotherm. The primary endotherm occurs in a temperature range of between 70-90°C and the secondary endotherm occurs in a temperature range of 95-110°C.

The Office cites to column 3 of Tanikawa as support for the assertion that the cited art discloses a wax that is similar to the wax recited in the present claims. The disclosure at column 3 of Tanikawa which may be relevant to the DSC curve of the Tanikawa wax is reproduced below for convenience.

> According to the present invention, there is provided a toner for developing electrostatic image, comprising a binder resin and a hydrocarbon wax, wherein the hydrocarbon wax provides a DSC curve, as measured by a differential scanning calorimeter, showing an onset temperature of heat absorption in the range of 50°-110° C. and at least one heat absorption peak P1 in the range of 70°-130° C. giving a peak temperature T_{P1} on temperature increase, and showing a maximum heat evolution peak giving a peak temperature in the range of $T_{P1}\pm 9°$ C. on temperature decrease.
>
> According to another aspect, the present invention provides a toner for developing electrostatic images, comprising a binder resin and a hydrocarbon wax; wherein the toner provides a DSC curve as measured by a differential scanning calorimeter, showing a rising temperature of heat absorption of at least 80° C., an onset temperature of heat absorption of at most 105° C. and a heat absorption peak temperature in the range of 100°-120° C., respectively on temperature increase, and showing a heat evolution peak giving a heat evolution peak temperature in the range of 62°-75° C. and a heat evolution peak intensity ratio of at least 5×10^{-3} on temperature decrease.

See column 3, lines 30-53 of Tanikawa.

Applicants submit the above-quoted disclosure of Tanikawa does not describe a wax having a primary and secondary endotherms occurring at temperature ranges of 70-90°C and 95-110°C, respectively. Applicants submit the Office has failed to identify disclosure Tanikawa that describes, *inter alia,* this feature of the presently claimed invention and therefore failed to set forth a *prima facie* case of obviousness. The rejection should therefore be withdrawn.

The Office further failed to identify any disclosure in Terauchi and that cures this deficiency of Tanikawa. Instead, the Office merely states that Terauchi discloses linear waxes having similar crystallinity. The rejection is thus not supportable. Applicants respectfully request allowance of the claims.

In the Amendment filed in the present case on November 19, 2007, Applicants pointed out that Tanikawa includes disclosure that would lead those of ordinary skill in the art away from the presently claimed invention. As already noted above and as expressed in independent Claims 1 and 21, the presently claimed invention requires the presence of a wax having primary and secondary endotherms at 70-90°C and 95-110°C, respectively.

The wax that is present in the electrostatic developer of the present claims must exhibit an endotherm in the range of 70-90°C. Applicants submit that Tanikawa discloses that waxes having an endotherm in the range of 70-90°C are inferior to electrostatic developers that exclude such waxes. Because Tanikawa discloses that waxes having the primary endotherm of the presently claimed invention are disfavored, Tanikawa teaches away from the presently claimed invention.

Applicants draw the Office's attention to MPEP § 2145(X)(D) which describes the conditions under which a reference teaches away from a claimed invention. Here, Tanikawa discloses that toners (e.g., electrostatic developers) that include a wax having an endotherm

within the temperature range of the primary endotherm of the present claims are inferior. Applicants submit that those of ordinary skill in the art reading the disclosure of Tanikawa would not be led to the presently claimed invention. Instead, those of ordinary skill in the art would understand that there are disadvantages to including such a wax in toners and/or electrostatic developers.

The arguments in the November 19, 2007 Amendment put forth by Applicants with respect to Tanikawa's teaching away from the presently claimed invention are reproduced below for convenience.

The Office responded to Applicants' November 19, 2007 arguments that Tanikawa teaches away from the presently claimed invention by stating the following:

> Applicant points to examples in Tanikawa to overcome the obviousness rejection. This not convincing because the closest prior art of Tanikawa is not being compared to the instant invention, rather to other waxes not taught by the Applicant. A criticality of a combination of characteristics has not been established over the prior art of Tanikawa. One of ordinary skill in the art would expect similar performance of a hydrocarbon wax because of the direct suggestion of Tanikawa. The rejection of Tanikawa in view of Terauchi has not been addressed.

See page 3, paragraph no. 4 of the February 5, 2008 Office Action.

The Office completely misses the point. Applicants did not intend and do not need to provide a direct comparison of the Tanikawa disclosure with a wax of the present claims. Applicants instead have shown that Tanikawa teaches away from the presently claimed invention. A side-by-side comparison of the art with the claimed invention is not necessary in order to establish that the cited art teaches away from the claimed invention.

The Office's response to Applicants' arguments shows that the Office failed to apply the correct legal test to determine whether the claimed subject matter is obvious. Applicants

submit that a reference that teaches away from a claimed invention cannot render the claimed invention obvious irrespective of any comparison of the cited art and the claimed invention.

The Office also cited to the lack of "a criticality of a combination of characteristics". This further shows that the Office has applied an incorrect legal test with respect to the patentability of the claimed invention. Applicants need not show any "criticality of a combination of characteristics" in order to demonstrate patentability. Instead, Applicants can show that the cited art teaches away from the claimed invention. A prior art "teaching away" from a claimed invention is probative of patentability.

Tanikawa discloses a series of inventive waxes in Tables 1 and 13. The inventive waxes of Table 1 are identified as A1, B1, C1, D1, and E1 and the inventive waxes of Table 13 are identified as A3, B3, C3, D3, and E3. The inventive waxes of Tables 1 and 13 of Tanikawa have absorption peak temperatures that are greater than 100°C. In contrast, the comparative examples of Tables 1 and 13 of Tanikawa have absorption peak temperatures of about 100°C or less than 100°C. The performance of toners that include the waxes of Tanikawa are described in Tables 5-6 and 17-19. Of particular interest are Tables 6 and 18 which provide an easily recognizable comparison of the performance properties of the comparative and inventive toners of Tanikawa (see Tables 5-6 and 17-18 reproduced below for convenience). These tables provide an easy visual recognition that the properties of the comparative toners, i.e., those toners containing waxes having absorption peak temperatures substantially lower than the absorption peak temperatures of the inventive examples, provide poor performance in areas such as anti-blocking, image density, and fog.

TABLE 5

	Binder resin	Wax	DSC characteristics of toners: On heating: Rising temp. (°C.)	On heating: Onset temp. (°C.)	On heating: T_{HAP}* (°C.)	On cooling: T_{HEP}* (°C.)	On cooling: Intensity ratio ($\times 10^{-3}$)
Toner							
1	1	A1	87	96	107	70	25.5
2	2	B1	90	98	110	69	32.0
3	3	C1	85	93	104	72	28.5
4	1	D1	82	100	115	70	12.2
5	2	E1	95	102	118	68	20.7
Comp. toner							
1	1	F1	74	76	100	65	47.5
2	2	G1	70	75	96	62	38.2
3	3	H1	73	84	105	66	2.9
4	1	I1	108	112	125	75	16.4
5	1	None	43	52	64	—	—

T_{HAP}*: Heat-absorption peak temperature
T_{HEP}*: Heat-evolution peak temperature

TABLE 6

				Evaluation of fixability, storability and developing performance: Fixability: T_{FI} (°C.)	Fixability: Density decrease (%) at 150° C.	Anti-offset: T_{OFL} (°C.)	Anti-offset: T_{OFH} (°C.)	Anti-offset: $T_{non\text{-}off}$ (°C.)	Anti-blocking	Developing performance: Image density	Developing performance: Fog
Ex.	Toner	Binder resin	Wax								
1	1	1	A1	125	2.5	115	205	90	◎	1.35	◎
2	2	2	B1	120	2	115	205	90	◎	1.34	○
3	3	3	C1	130	3.5	120	210	90	○	1.36	◎
4	4	1	D1	125	4	120	200	80	○	1.33	○
5	5	2	E1	130	5.5	120	205	85	◎	1.37	○
Comp Ex.	Comp. toner										
1	1	1	F1	120	2.5	115	190	75	Δ	1.29	Δ
2	2	2	G1	115	1.5	110	185	75	X	1.13	Δ
3	3	3	H1	125	4.5	120	195	75	Δ	1.24	Δ
4	4	1	I1	150	9.5	140	210	70	○	1.28	○
5	5	1	None	145	8.5	140	180	40	◎	1.32	○

TABLE 17

			Fixing performances				
			Fixability				
				Density	Anti-offset		
	Toner	Wax	T_{FI} (°C.)	decrease (%) at 150° C.	T_{OFL} (°C.)	T_{OFH} (°C.)	$T_{non\text{-}offset}$ range (°C.)
Ex.	Toner						
15	11	A3	120	3	115	205	90
16	12	B3	120	3	115	205	90
17	13	C3	120	2	115	200	85
18	14	D3	125	6	120	200	80
19	15	E3	130	7	120	200	80
Comp. Ex.	Comp. toner						
9	9	F3	120	3	115	195	80
10	10	G3	120	3	115	185	70
11	11	H3	125	4	120	195	75
12	12	I3	135	8	130	200	70
13	13	none	160	15	150	180	30
14	14	550P*	150	10	140	190	50

*550P: Low-molecular weight polypropylene wax

TABLE 18

	Storability and developing performance				
				Developing performance	
	Toner	Wax	Anti-blocking	Image density	Fog
Ex.	Toner				
15	11	A3	◎	1.38	◎
16	12	B3	◎	1.38	◎
17	13	C3	○	1.35	◎
18	14	D3	○	1.32	○
19	15	E3	◎	1.35	○
Comp. Ex.	Comp. toner				
9	9	F3	Δ	1.23	Δ
10	10	G3	X	1.12	Δ
11	11	H3	Δ	1.24	Δ
12	12	I3	○	1.36	○
13	13	none	◎	1.37	○

Applicants submit that Tanikawa teaches away from using waxes having low absorption peak temperatures. This is evident from the fact that those toners and compositions containing hydrocarbon waxes having low absorption peak temperatures provide poor performance when used in toners. Applicants submit that one of ordinary skill in the art reading the above-described disclosure of Tanikawa would conclude that hydrocarbon waxes having relatively low absorption peak temperatures will not provide good performance. Hence, Tanikawa teaches away from compositions that include hydrocarbon waxes having a primary endotherm of from 70-90°C (e.g., lower than the minimum 100°C absorption peak temperature for the inventive examples of Tanikawa).

Applicants submit the presently pending subject matter is patentable over the prior art for the reasons discussed above in detail. Applicants request withdrawal of the rejection and the allowance of all now-pending claims.

Respectfully submitted,

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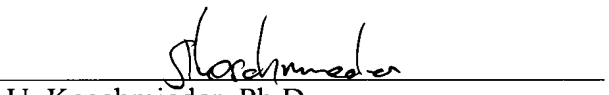
Norman F. Oblon



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